

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 2. (Canceled)

3. (Currently Amended) ~~The A semiconductor device according to claim 1,~~
~~wherein comprising:~~

a semiconductor substrate;

a tower-like gate pillar formed on said semiconductor substrate via an insulation layer, said gate pillar including a channel region formed so as to be positioned between impurity diffusion regions in a vertically extending direction with respect to a principal side of said semiconductor substrate;

a gate insulation film formed on an outer surface of said gate pillar; and

a gate electrode film formed on an outer surface of said gate insulation film;

wherein a wiring layer is formed ~~on~~below said gate electrode film on ~~a~~the principal side of said substrate;

wherein said gate electrode film ~~includes~~is formed of a plurality of stacked layers including a first electrode film and a second electrode film formed on an outer circumferential side of said first electrode film; and

wherein said first electrode film has an end thereof spaced from said wiring layer, and said second electrode film is formed so as to electrically connect with said wiring layer.

4. – 5. (Canceled)

6. (Currently Amended) ~~The semiconductor device according to claim 2,A~~
semiconductor device comprising:
a semiconductor substrate;
a tower-like gate pillar formed on said semiconductor substrate via an
insulation layer, wherein said gate pillar includes a channel region formed so as to be
positioned between impurity diffusion regions in a vertically extending direction with
respect to a principal side of the substrate;
a gate insulation film formed between said gate pillar and a gate electrode
film; and
said gate electrode film is formed on said gate insulation film so as to enclose
an outer circumferential side of said gate pillar,
wherein said gate electrode film includes a first electrode film formed as to
enclose said gate pillar from a circumferential direction thereof, and a second
electrode film formed so as to enclose said first electrode film from a peripheral side
thereof, and
wherein said first electrode film is formed with grain size smaller than that of
said second electrode film.

7. (Currently Amended) ~~The semiconductor device according to claim 2,A~~
semiconductor device comprising:
a semiconductor substrate;
a tower-like gate pillar formed on said semiconductor substrate via an
insulation layer, wherein said gate pillar includes a channel region formed so as to be
positioned between impurity diffusion regions in a vertically extending direction with

respect to a principal side of the substrate;

a gate insulation film formed between said gate pillar and a gate electrode film; and

said gate electrode film is formed on said gate insulation film so as to enclose an outer circumferential side of said gate pillar,

wherein said gate electrode film includes a first electrode film formed as to enclose said gate pillar from a circumferential direction thereof, and a second electrode film formed so as to enclose said first electrode film from a peripheral side thereof, and

wherein said first electrode film and said second electrode film each include a polycrystalline silicon film.

8. (Currently Amended) ~~The semiconductor device according to claim 2,A~~
semiconductor device comprising:

a semiconductor substrate;

a tower-like gate pillar formed on said semiconductor substrate via an insulation layer, wherein said gate pillar includes a channel region formed so as to be positioned between impurity diffusion regions in a vertically extending direction with respect to a principal side of the substrate;

a gate insulation film formed between said gate pillar a said gate electrode film; and

said gate electrode film is formed on said gate insulation film so as to enclose an outer circumferential side of said gate pillar,

wherein said gate electrode film includes a first electrode film formed as to enclose said gate pillar from a circumferential direction thereof, and a second electrode film formed so as to enclose said first electrode film from a peripheral side

thereof, and

wherein said first electrode film is a polycrystalline silicon film and said second electrode film is a conductive film containing metal element including WSi, CoSi, WiSi, TiSi or RuSi.

9. (Currently Amended) ~~The semiconductor device according to claim 2, A semiconductor device comprising:~~

a semiconductor substrate;

a tower-like gate pillar formed on said semiconductor substrate via an insulation layer, wherein said gate pillar includes a channel region formed so as to be positioned between impurity diffusion regions in a vertically extending direction with respect to a principal side of the substrate;

a gate insulation film formed between said gate pillar and a gate electrode film; and

said gate electrode film is formed on said gate insulation film so as to enclose an outer circumferential side of said gate pillar,

wherein said gate electrode film includes a first electrode film formed as to enclose said gate pillar from a circumferential direction thereof, and a second electrode film formed so as to enclose said first electrode film from a peripheral side thereof, and

wherein said channel region is formed with a grain size greater than that of said first electrode film or said second electrode film.

10. (Canceled)